

### REMARKS

Claims 1-24 are pending in this application. Claim 24 is new.

The Examiner has rejected claims 1-23. Applicants request that the Examiner reconsider claims 1-23 based on the following remarks and arguments. Applicants request that the Examiner consider new claim 24.

I. Claim Rejections – 35 USC § 103(a) – *Murray et al.*

The Examiner has rejected claims 7-21 under 35 U.S.C. 103(a) as being unpatentable over *Murray et al.*

The Examiner makes no statement regarding the relevant teachings of *Murray et al.* that are relied upon for the rejection of independent claim 7. The rejection of claim 7 is therefore not proper and should be withdrawn in that it does not give the Applicants a fair opportunity to reply.

Section 706.02(j) of the Manual of Patent Examining Procedure, Eighth Edition Incorporating Revision No. 5 states that “It is important for an examiner to properly communicate the basis for a rejection so that the issues can be identified early and the applicant can be given fair opportunity to reply. Furthermore, if an initially rejected application issues as a patent, the rationale behind an earlier rejection may be important in interpreting the scope of the patent claims. Since issued patents are presumed valid (35 U.S.C. 282) and constitute a property right (35 U.S.C. 261), the written record must be clear as to the basis for the grant. Since patent examiners cannot normally be compelled to testify in legal proceedings regarding their mental

processes (see MPEP § 1701.01), it is important that the written record clearly explain the rationale for decisions made during prosecution of the application.”

Alternatively, based on a careful reading of *Murray et al.*, Applicants disagree that their claim 7 is obvious in view of *Murray et al.* The disclosure in *Murray et al.* is for an improved **metalcutting** insert (col. 1; lines 49-50, emphasis added) that contains an “integral chipbreaking means” (col. 3; line 29). It would not have been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice (*In re Leshin*, 125 USPQ 416) when machining metal compared with machining fiber cement. There is no teaching, suggestion, or motivation in *Murray et al.* for a “cutting tool insert for use in connection with a **fiber cement** machining tool comprising a superabrasive blank” as claimed in Applicants’ claim 7 (emphasis added). It would not be obvious to one of ordinary skill in the art that a metalcutting insert could be used to cut fiber cement containing cement, cellulose, and sand into chips as taught and claimed in claim 7 by Applicants. In particular, it is not obvious that a metal cutting tool could be used to machine fiber cement so that continuous and/or semi-continuous chips of the fiber cement are generated (see for example Applicants’ as published paragraph [0009]) without tearing the cellulose fibers, producing dust, and providing a poor quality workpiece finish.

In addition, *Murray et al.* teach that their improvement of their metal cutting tool is that it contains an “integral chipbreaking means (26)” (col. 3; line 29). The chipbreaker 26 of *Murray et al.* is part of the substrate that receives the polycrystalline cutting tool insert (see also col. 4; lines 21-46), rather than part of the polycrystalline cutting material 40. Thus, it cannot be said that Applicants’ claim 7 is obvious in view of *Murray et al.* Further, because of the

requirement of a separate chipbreaking means in *Murray et al.*, *Murray et al.* actually teach away from Applicants' claim 7, and therefore could not teach, suggest or motivate one of ordinary skill in the art to provide "a fiber cement machining tool comprising a superabrasive blank", as claimed in Applicants' claim 7.

Furthermore, Applicants' note that *Murray et al.* show no appreciation that any particular grain size is especially suitable for chipbreaking. As noted above, a separate, non-superabrasive chipbreaker is disclosed in *Murray et al.* Applicants have added claim 24 to clarify this embodiment. The prior art suggests that an "average grain size of 25 to 40  $\mu\text{m}$  polycrystalline diamond ("PCD") offer(ed) the best combination of abrasion resistance and surface finish of machined workpieces" (Applicants' as-published paragraph [0007]). Applicants' claim 7 claims "a fiber cement machining tool comprising a superabrasive blank **having an average grain size less than or equal to about 10  $\mu\text{m}$** " (emphasis added). Applicants' FIG. 3A shows a "poor" quality fiber cement surface with torn cellulose fibers obtained from machining fiber cement with a superabrasive tool having an average grain size of 20  $\mu\text{m}$ , whereas FIG. 3B shows a "good" surface obtained when machined with an 8  $\mu\text{m}$  average grain size tool. Therefore, Applicants' claim 7 of "an average grain size less than or equal to about 10  $\mu\text{m}$ " is not anticipated by the prior art, which teaches a 25 to 40  $\mu\text{m}$  average grain size for the best combination of abrasion resistance and surface finish of machined workpieces, nor is it obvious in view of *Murray et al.*, as they do not disclose any information regarding grain sizes.

At least for the reasons cited above, Applicants have demonstrated that Applicants' claim 7 is not made obvious by *Murray et al.*, and is condition for allowance. Applicants, therefore, respectfully request that the Examiner withdraw the rejection to claim 7

and allow claim 7. Since independent claim 7 is in condition for allowance, all claims that depend directly or indirectly from claim 7 are also in condition for allowance. Applicants request that the Examiner withdraw the rejections of claims 8-13 and allow claims 8-13, which depend directly from independent claim 7.

With further respect to claims 8 and 9, the Examiner maintains that it would have been obvious to one having ordinary skill in the art at the time of the invention was made to use the diamond materials, since it has been held to be within the skill of a general worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416. The Applicants disagree that the use of superabrasives to machine fiber cement is an obvious design choice. The Applicants have argued that *Murray et al.* do not render Applicants' claim 7 obvious. As it would not be obvious for one to use a superabrasive metal cutting tool to generate chips from fiber cement (claim 7), it would not be obvious to use specific superabrasive materials, such as PCD or PCBN as claimed in Applicants' claim 8, or those formed by HP/HT as in Applicants claim 9. The Applicants maintain therefore that claims 8 and 9 are in condition for allowance, and request that the Examiner allow claims 8 and 9.

The Examiner makes no statement regarding the relevant teachings of *Murray et al.* that are relied on for the rejection of claims 10-13. The rejections of claims 10-13 are therefore not proper in that they do not give the Applicants a fair opportunity to reply. Alternatively, Applicants do not see anything that describes a "fiber cement machining tool." as claimed in Applicants independent claim 7, together with the specific elements of a fiber cement

machining tool as claimed in the Applicants' claims 10-13. Therefore, Applicants' claims 10-13 are not made obvious in view of *Murray et al.* Applicants request allowance of claims 10-13.

The Examiner makes no statement regarding the relevant teachings of *Murray et al.* that are relied upon for the rejection of independent claim 14. As pointed out above for claim 7, the rejection of claim 14 is not proper and should be withdrawn in that it does not give the Applicants a fair opportunity to reply.

In addition, Applicants disagree that Applicants' claim 14 is made obvious in view of *Murray et al.* All of the arguments that were made above for Applicants' claim 7 equally apply to Applicants' claim 14. For the reasons presented above for claim 7, Applicants argue that *Murray et al.* do not teach, suggest, or motivate one of ordinary skill in the art to provide a "machining tool for cutting fiber cement parts comprising a cutting tool insert, wherein the insert comprises a superabrasive blank having an average grain size less than or equal to about 10  $\mu\text{m}$ ", as claimed in Applicants' claim 14. Therefore, Applicants' claim 14 is in condition for allowance.

Since Applicants' claim 14 is in condition for allowance, Applicants respectfully request that the Examiner withdraw the rejection to claim 14 and allow claim 14. Since independent claim 14 is in condition for allowance, all claims that depend directly or indirectly from claim 14 are also in condition for allowance. Applicants request that the Examiner withdraw the rejections of claims 15-21 and allow claims 15-21, which depend directly or indirectly from independent claim 14.

With further respect to claims 15 and 16, the Examiner maintains that it would have been obvious to one having ordinary skill in the art at the time of the invention was made to

use the diamond materials, since it has been held to be within the skill of a general worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416. The Applicants disagree that the use of superabrasives to machine fiber cement is an obvious design choice. The Applicants have argued that *Murray et al.* do not render Applicants' claim 14 obvious. As it would not be obvious for one to use a superabrasive metal cutting tool to generate chips from fiber cement (claim 14), it would not be obvious to use specific superabrasive materials, such as PCD or PCBN as claimed in Applicants' claim 15, or those formed by HP/HT as in Applicants' claim 16. The Applicants maintain therefore that claims 15 and 16 are in condition for allowance, and request that the Examiner allow claims 15 and 16.

The Examiner has rejected claim 17 in that it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the claimed ranges, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Alter*, 105 USPQ 233. Applicants maintain that the prior art does not disclose the use of superabrasives to machine fiber cement. Even if the metalcutting tool of *Murray et al.* were relevant to machining fiber cement, *Murray et al.* make no disclosure regarding a blank, wherein a particular volume range of the blank constitutes a bonding matrix. Therefore, the percentage of a blank that includes a bonding matrix for machining fiber cement is also not obvious. Applicants request allowance of claim 17.

The Examiner rejects claims 18 and 19 in that the choice of tools would have been an obvious matter of design choice to a skilled artisan depending on the desired use of the

assembly. Applicants disagree. *Murray et al.* teach an improved metalcutting insert which incorporates a polycrystalline diamond or a polycrystalline cubic boron nitride material therein as a cutting edge material. At most, *Murray et al.* teach a metalcutting rake with a superabrasive cutting edge. There is no mention or suggestion of using the rake of *Murray et al.* as a fiber cement turning tool, as in Applicants' claim 18, nor a fiber cement milling tool, as in Applicants' claim 19. Applicants maintain that claims 18 and 19 are not obvious as a matter of design choice, at least because the claimed fiber cement machining tool is not obvious.

The Examiner makes no statement regarding the relevant teachings of *Murray et al.* that are relied on for the rejection of claims 20 and 21. The rejections of claims 20 and 21 are therefore not proper in that it does not give the Applicants a fair opportunity to reply. Alternatively, Applicants do not see anything that describes a "fiber cement machining tool," as claimed in Applicants' independent claim 14, so specific elements of a fiber cement machining tool as claimed in the Applicants' claims 20 and 21 are not made obvious in view of *Murray et al.* Further, *Murray et al.* do not disclose or suggest a "relieved tooth formed out of the blank...mounted onto the machining tool (claim 20), nor do *Murray et al.* disclose or suggest a fiber cement machining tool with an array of relieved tips (claim 21). Applicants request allowance of claims 20 and 21.

II. Claim Rejections – 35 USC § 103(a) - *Fladgard et al.* in view of *Murray et al.*

The Examiner has rejected claim 1-6, 22, and 23 under 35 U.S.C. 103(a) as being unpatentable over *Fladgard et al.* in view of *Murray et al.*

Applicants maintain that the disclosure in *Fladgard et al.* does not disclose a "method for machining a fiber cement workpiece comprising: operating a machining tool to machine a fiber cement workpiece to generate chips out of the workpiece, wherein the machining tool comprises a cutting tool insert comprising a superabrasive material having an average grain size of less than or equal to about 10  $\mu\text{m}$ ." as claimed in Applicants' claim 1. *Fladgard et al.* disclose the use of cutting blades that "penetrate into the workpiece 90 for only short distances" (col. 5, line 65). The blades do not fully penetrate the fiber cement material, and the "cutting" disclosed in *Fladgard et al.* relies on bending of the workpiece to "impart compressive stress to the first side of the FCS workpiece and tensile stress to the second side of the workpiece (so that the FCS workpieces continue to bend...to generate a crack that (self) propagates along the cutting plane through the workpiece" (col. 3, lines 33-43). *Fladgard et al.* do not disclose or make obvious "operating a machining tool to machine a fiber cement workpiece **to generate chips** out of the workpiece" as disclosed in Applicants' claim 1 (emphasis added). *Fladgard et al.* rely on bending and induced stress to cut a fiber cement workpiece, and do not disclose or make obvious in view of *Murray et al.* the use of any tool to generate chips of fiber cement. As such, the method in Applicants claim 1 is not made obvious by *Fladgard et al.* in view of *Murray et al.*

In addition, it was hereinbefore demonstrated that *Murray et al.* do not teach, suggest, motivate, or make obvious "operating a machining tool to machine a **fiber cement** workpiece to generate chips out of the workpiece wherein the machining tool comprises a cutting tool insert comprising a superabrasive material **having an average grain size of less than or equal to about 10  $\mu\text{m}$** " as claimed in Applicants' claim 1. *Murray et al.* disclose machining



metal, which has significantly different mechanical properties and response to machining than fiber cement, and further do not disclose anything about grain size of the superabrasive. As such, the combination of *Fladgard et al.* with *Murray et al.* is not proper and does not make Applicants' claim 1 obvious.

At least for the reasons cited above, Applicants have demonstrated that Applicants' claim 1 is not made obvious by *Fladgard et al.* in view of *Murray et al.*, and is condition for allowance. Applicants, therefore, respectfully request that the Examiner withdraw the rejection to claim 1 and allow claim 1. Since independent claim 1 is in condition for allowance, all claims that depend directly or indirectly from claim 1 are also in condition for allowance. Applicants request that the Examiner withdraw the rejections of claims 2-6 and allow claims 2-6, which depend directly from independent claim 1.

The Examiner has rejected claims 2-4 in that it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the claimed materials, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416. Applicants respectfully disagree that it would be obvious to one of ordinary skill in the art to choose metalcutting materials to cut fiber cement. Fiber cement and metals have different mechanical properties. Problems of the prior art include dust formation and tearing of the cellulose fibers during machining. Because of these differences in mechanical properties, it would not be obvious to one of ordinary skill in the art that metalcutting tools could be used to machine fiber cement without producing dust and tearing the cellulose fibers.

Therefore, it would at least not be obvious to use PCD or PCBN superabrasive material (claim 2) nor HP/IT formed cutting tool inserts (claim 3).

The fact that it is not obvious to use metalcutting tools containing PCD, PCBN or HP/IT superabrasives to machine fiber cement is *further* evident in that Applicants' independent claims 1, 7, 14, and 22 are limited to superabrasive materials "having an average grain size of less than or equal to about 10  $\mu\text{m}$ ." The Applicants attempted to use superabrasive tools that had an average grain size of 20  $\mu\text{m}$  to machine fiber cement surface as described in paragraph [0035] of the published application and FIG. 3A, with limited success. FIG. 3A shows that the surface machined with PCD tools with an average grain size of 20  $\mu\text{m}$  exhibited tearing of the cellulose fibers. However, when tools with an average PCD grain size of 8  $\mu\text{m}$  were used (FIG. 3B), there was no tearing of the cellulose fibers observed. Even based on the experimental results provided in FIG. 3A, it would not be obvious to use PCD or PCBN superabrasive material (claim 2) nor HP/IT formed cutting tool inserts (claim 3). Applicants request allowance of claims 2 and 3.

In addition, there is no suggestion or disclosure in *Fladgard et al.* regarding chip formation, therefore Applicants' claim 4 regarding continuous or semi-continuous chips is not obvious by *Fladgard et al.* in view of *Murray et al.* Applicants request allowance of claim 4.

With respect to Applicants' claims 5 and 6, the Examiner maintains that the orientation and movement of the work and tool relative to each other would have been an obvious matter of design choice, since these particular arrangements are "well known". However, the Examiner cites no support for this statement. Applicants respectfully disagree with the Examiner that these arrangements are well known "for operating a machining tool to **machine a fiber cement workpiece to generate chips** out of the workpiece... wherein the

machining tool comprises a cutting tool insert comprising a superabrasive material **having an average grain size of less than or equal to about 10  $\mu\text{m}$** ", as claimed in Applicants' claim 1 (emphasis added). Therefore it is not obvious that the orientation and movement of the work and tool relative to each other, as claimed in Applicants' claims 5 and 6 are obvious arrangements when metalcutting tools are used to machine fiber cement workpieces. Applicants therefore maintain that Applicants' claims 5 and 6 are in condition, and request allowance of claims 5 and 6.

All of the arguments that were made above for Applicants' claim 1 equally apply to Applicants' claim 22. For the reasons presented above for claim 1, Applicants argue that *Fladgard et al.* in view of *Murray et al.* do not teach, suggest, or motivate one of ordinary skill in the art to provide "operating a machining tool to machine a **fiber cement** workpiece to **generate chips** out of the workpiece, wherein the machining tool comprises a cutting tool insert comprising a superabrasive material having **an average grain size of less than or equal to about 10  $\mu\text{m}$** " as in Applicants' claim 22 (emphasis added). *Murray et al.* disclose machining metal, which has significantly different mechanical properties and response to machining than fiber cement, and further *Murray et al.* do not disclose anything about grain size of the superabrasive. *Fladgard et al.* disclose bending of the workpiece to "impart compressive stress to the first side of the FCS workpiece and tensile stress to the second side of the workpiece (so that) the FCS workpieces continue to bend...to generate a crack that (self) propagates along the cutting plane through the workpiece" (col. 3, lines 33-43). There is no suggestion, teaching, or motivation to combine the two references, and even when combined, for the reasons stated above, *Fladgard et al.* in view of *Murray et al.* do not make Applicants' claim 22 obvious.

At least for the reasons cited above, Applicants have demonstrated that Applicants' claim 22 is not made obvious by *Fladgard et al.* in view of *Murray et al.*, and is in condition for allowance. Applicants, therefore, respectfully request that the Examiner withdraw the rejection to claim 22 and allow claim 22. Since independent claim 22 is in condition for allowance, all claims that depend directly or indirectly from claim 22 are also in condition for allowance. Applicants request that the Examiner withdraw the rejections of claim 23 and allow claim 23, which depends directly from independent claim 22.

The Examiner has rejected claim 23 in that it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the claimed materials, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416. Applicants respectfully disagree that it would be obvious to one of ordinary skill in the art to choose metalcutting materials to cut fiber cement. Fiber cement and metals have different mechanical properties. Problems of the prior art include dust formation and tearing of the cellulose fibers during machining. Because of these differences in mechanical properties, it would not be obvious to one of ordinary skill in the art that metalcutting tools could be used to machine fiber cement without producing dust and tearing the cellulose fibers. Therefore, it would at least not be obvious to use PCD or PCBN superabrasive material as in Applicants' claim 23.

The fact that it is not obvious to use metalcutting tools containing PCD, PCBN or HP/HT superabrasives to machine fiber cement is *further* evident in that the Applicants' independent claims 1, 7, 14, and 22 are limited to superabrasive materials "having an average

grain size of less than or equal to about 10  $\mu\text{m}$ .” The Applicants attempted to use superabrasive tools that had an average grain size of 20  $\mu\text{m}$  to machine fiber cement surface as described in paragraph [0035] of the published application and FIG. 3A, with limited success. FIG. 3A shows that the surface machined with PCD tools with an average grain size of 20  $\mu\text{m}$  exhibited tearing of the cellulose fibers. However, when tools with an average PCD grain size of 8  $\mu\text{m}$  were used (FIG. 3B), there was no tearing of the cellulose fibers observed. Even based on the experimental results provided in FIG. 3A, it would not be obvious to use PCD or PCBN superabrasive material (claim 23). Applicants request allowance of claim 23.

Applicants have added claim 24. Applicants’ new claim 24 makes clear that embodiments of Applicants’ claim for a method (claim 1) for machining fiber cement requires that the “superabrasive material generates the chips out of the workpiece”. Support for this claim is found in FIG. 1A, currently amended paragraph [0020] and as-published paragraphs [0022-0023], which together describe a cutting insert **28** ([0028]) that “has a cutting edge **26** to be individually engaged with the FC workpiece” ([0020]). “The insert substantially comprises superabrasive materials of PCD, PCBN, or mixtures thereof” ([0023]). As discussed above, *Murray et al.* require an integral chipbreaker to form chips of metal, and the chipbreaker is part of the substrate, and does not consist of the superabrasive material. *Fladgard et al.* do not teach nor disclose a method for generating chips. As such, neither *Murray et al.*, nor *Fladgard et al.* anticipate or make obvious Applicants’ claim 24. Applicants request allowance of claim 24.

### CONCLUSION

Claims 1-24 are now pending. Claim 24 has been added.

The claims listed in the Listing of Claims, herein, are submitted for the Examiner's reconsideration for allowance based on the Applicants' arguments presented in the REMARKS section *supra*.

All of the stated grounds of rejection have been properly traversed, accommodated or rendered moot. Applicants, therefore, respectfully request that the Examiner reconsider and withdraw all presently outstanding rejections. There being no other rejections, Applicants respectfully request that the current application be allowed and passed to issue.

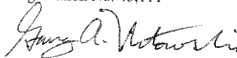
Should the Examiner have any questions or comments, or need any additional information, he is invited to contact the undersigned at her convenience.

No fee is believed to be due for this submission. To the extent that fees may be required for this Amendment, the Commissioner is hereby authorized to debit Deposit Account 50-0436.

Respectfully submitted,  
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